

ABSTRACT

A data structure, document data stream, method and apparatus for identifying resources prior to printing. A print data stream structure is provided that can be specified at the beginning of a document or job, or on any page boundary in a document or job, and that identifies complex resources that are required by the pages that follow. This structure is processed by a print server, which uses the resource references to download any missing resources before printing of the following pages is started. Accordingly, print underruns are avoided by ensuring that complex resources are downloaded to the printer before the first page is initiated.